LP_DAILY_O3 v1.0 Release Notes

2 Nov., 2012

The ozone retrieval algorithm *[Didier et al, 2012]* uses Rogers' Optimal Estimation (OE) technique *[Rogers, 2000]* with Tikhonov regulation and climatological a-priori information. It relies on the radiative transfer model which is based on the Gauss Seidel method *[Herman et al, 1995]*. In the UV ozone retrieval, the doublet normalized radiances are used as state vectors, and in visible retrieval, the triplet. The solar spectrum used to calculated radiance residuals is synthetic, derived from the University of Saskatchewan spectrum. The ozone cross section spectrum is the one of Bass and Paur.

The ozone climatological a-priori is the one from Goddard Space Flight Center (GSFC), which is built based on the seven years of MLS ozone measurement. The aerosol climatology uses the data from the 20 years of SAGE-II measurements, and for NO2, the climatology by Anderson is applied.

The retrieval process starts with initial tangent height (TH) registration (turned off in this release), followed by cloud top height retrieval, and then, the surface reflectance retrieval. The list below is the retrieval processing flow used in this operational version. Note that NO2 concentration is not retrieved in this release, nor is there an adjustment for Tangent Height error.

The combined ozone density profile is the combination of the retrieved profiles of UV and Visible. Once the combination of the UV and visible profiles is successful, the quality is assigned with the value 1.0 in this release version, otherwise it is assigned 0.0.

1. Tangent Height (TH) adjustment is off, 0 value used
2. Cloud top height retrieval (to establish the bottom height of the retrieval region)
3. Surface reflectance estimate
4. Initial ozone retrieval (using a-priori aerosol and only visible spectral channels)
5. Initial aerosol retrieval (using a-priori aerosol size distribution) at a series of wavelengths
6. Aerosol size estimates (using wavelength dependence of aerosol extinction)
7. Final aerosol retrieval (using retrieved aerosol size distribution) at a series of wavelengths
8. Final Tangent Height registration (turned off, 0 value used)
9. NO2 retrieval (no retrieval, climatology value used)
10. Ozone retrieval at high altitudes (using Huggins/Hartley UV bands)
11. Ozone retrieval at low altitudes (using Chappuis visible bands)
12. Combination of ozone profile from UV and visible

References

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